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ON PATHOLOGY CAUSED BY WOOD

1. Historical Record. The knowledge of the facts relating to the noxiousness of wood dates back to antiquity.

The first reference seems to have been made to the subject in Ping Yuan Hon Lün, a Chinese document dating from the 7th century B.C., and deals with Rhus Vernicifera, from which lacquerers extracted their varnish.

Pliny "the Younger" reports irritations caused by pine trees.

Jones, in 1893, while observing workmen in the Clyde shipyards noted signs of irritations of the nasal mucous membrane and nosebleeds.

Then Sternberg in Austria, Oliver in Edinburgh, and Ewans added their names to research on this subject.

In 1907, in accordance with instructions issued by the British Government, a report was drawn up in which all cases observed over the preceding years were recorded.

Horand in 1914, Peche in 1939, and Jones in 1949, incriminated some new species, some of which, such as the oak and beech, were nontropical.

For a more recent source, there is the excellent paper written by Mr. Michel Baumer, which was published in 1955, in Bois et forêts des tropiques [Tropical Wood and Forests].

2. Etiology. The list of trees capable of causing morbid disorders is very long.

Symptoms attributable to the oak, beech, chestnut, locust, poplar, elm, plane tree, yew, juniper tree, Hungarian fir, alder, Sylvester pine, and European cytisus, have been observed in our areas.

Enumerating the many guilty exotic woods would be tedious, and of no real interest. Mention will simply be made of the snakewood group, mahogany, teak, Brazilian rosewood, and the ebonies.

A recapitulation of the notoriously aggressive trees will be found in the paper by Messrs. Gougerot and A. Carteau titled "Occupational Dermatosis".

3. Clinical Observations. Pathological symptoms attributable to wood fall into two groups:

cutaneous involvement;

respiratory involvement.

1. Cutaneous involvement. In general, cutaneous involvement is observed when fresh wood is handled. When wood is exposed to the air for a long time it loses its toxic power.

However, the opposite is true of some trees, such as the Brazilian Aroiera (or Cornaeiba or Schinus Antiarthriticus, or Molle wood), in which case it would be the oldest and most often used furniture that would be responsible for the greatest number of skin diseases.

The onset can be marked by such general symptoms as a sickish feeling, nausea, shivering, and low grade fever. Then a local sensation of tension, heat, and burning may appear, followed by increasingly intensive sometimes intolerable, pruritus.

At the same time, the lesions will take on a scarlet red hue with painful swelling resembling urticaria. Finally, small vesicles will be seen. These will enlarge and will contain a clear serositis.

Secondary complications, such as cracking, infection of the impetigo type and lichenification, can accompany the original lesions.

So far as areas of involvement are concerned, so-called wood-cutter's and carpenter's eczema involves the hands (the backs and between the fingers), as well as the face.

Lumbermen, and those who carry freshly cut logs on their shoulders, can have lesions at the level of the shoulder, the cheek, and the ear.

To illustrate the contact zone concept, we wish to recall the very strange observation by Dr. Escartefigure (Toulon) who reported in 1935, in the Bulletin de la Société Francaise de Dermatologie, the case of one of his patients who came to see him with lesions at the neck level, and on the forearm, after wearing a necklace and a bracelet made of Madagascar rosewood.

These involvements sometimes appear at such covered zones as the neck, the palm part of the wrist, the fold of the elbow, the armpits, the thighs, and the genital organs.

Other cutaneous-mucous involvements can be seen. Eye troubles currently are associated with skin problems and include watering of the eyes, swelling of the eyelids, and blepharoconjunctivitis. Some trees cause a skin coloration that is detected after exposure to the sun. This is the case with Peroba Granda Amarella, or Brazilian satinwood, which imparts a bright yellow tinge to the skin. Recurring cheilitis also should be pointed out. Contact with the mouthpiece of a flute made of Cocobolo wood (Dalbergia, or Central American jacaranda), was the culprit.

All these involvements may be found as isolated cases, or can accompany respiratory symptoms, a review of which follows.

2. Respiratory involvement. This involvement has two main aspects; bronchial involvement, and involvement of the upper air passages.

(a) Bronchial involvement. Digestive symptomatology, with anorexia and vomiting, can be added to sensations of discomfort, heaviness, drowsiness and cold sweat, and vertigo with irregular pulse. These symptoms can manifest themselves in the form of dryness of the throat with retrosternal oppression and dyspnea, bringing about a real asthmatic attack.

Interesting observations have been published, including one by Longin (cited by Baumer) concerning a workman who suffered from asthmatic attacks such as these each time, and at the moment he entered, a recently cut over forest in which Robinier (false acacia), oak, and birch trees were present.

(b) Upper air passage involvement. This involvement can be grouped under two headings:

a symptomatic triad made up of nasopharyngeal prickling, bursts of

sneezing, and rhinorrhea, sometimes profuse, and epistaxis, appearing spontaneously, or when the nose is blown, and which can be rather serious, and can repeat several times after exposure has ceased.

We personally have had an opportunity to observe these facts in eight workers in a Marseilles firm after intensive handling of Bosse wood (or guarea cedrate).

4. Comments on the pathogenesis. Three factors must be taken into consideration when one attempts to explain the pathogenic action of wood.

1. The mechanical factor. This certainly is not the most important factor, but it is one that cannot be ignored, at least not with respect to the problem common to all dusts, and that is the size of the noxious particles; are they the very fine ones, or, on the other hand, the particles of some size?

2. The toxic factor. This factor is not very clear, but toxicological work by various authors has resulted in distinguishing a certain number of poisons.

The Physiology Department of the University of Melbourne was able to obtain an organic substance from the wood of the Dysoxilium Muelleri, one that could be the origin of epistaxis observed when working with this wood.

Aspidospermine has been found in the wood of the Peroba Granda Amarella (one of the Brazilian satinwoods).

Chrysophanhydroanthrone, a derivative of chrysophanic acid, was isolated in Tagayasan wood.

All these studies tend to confirm our opening comments concerning the action of fresh wood. It can be assumed that this volatile action would disappear by evaporation when wood, or wood dust, is seasoned in the open air.

3. The biological factor. The idea of sensitization, and of anaphylaxis, was introduced by Gougerot, Blamoutier, Spillmann, and Ravaut.

It is a fact that clinical examination is all that is needed to suspect the allergic nature of these attacks.

Much discussions has ensued as to the nature of the agent responsible for these reactions; the resins have been incriminated, and so too has tannin from barks.

It would seem that there is a strong correlation between the toxic and allergic factors, but there is no doubt that research is not sufficiently advanced to confirm the fact.

One can also ask if certain microorganisms (mushrooms, yeasts) are not intervening in these mechanisms and playing a role comparable to the one they have in other diseases which too can be attributed to vegetable products, such as classic byssinosis.

5. Prevention. 1. The generally valid principle in industrial toxicology that a toxic product be replaced by a non-toxic product, or one less toxic, can be applied to carpentry, but it must be remembered that

any tree can become noxious at one time or another.

2. Premises must be adequately ventilated, and machines must be equipped with effective suction systems, with particular attention given to sanders. The suction appliances must be carefully maintained and cleaned regularly, because the very fine and adhering wood dust causes rapid clogging.

3. From an individual's point of view, wearing a mask will be mandatory when handling notoriously irritating trees, or at the first sign of pathological involvement when a specie considered inoffensive up to that time, is used. Any wood handled for the first time, or not very well known, must be considered, a priori, as noxious.

4. The workers' attention will be drawn to the necessity for strict body and clothing hygiene. Work clothes must be clean, and as tight as possible at the wrists and at the ankles, and an apron protecting the opening of the trousers is highly recommended. A daily shower appears to be the best prevention against skin disorders.

5. The use of inert powders (such as talc and kaolin) and cream barriers have been recommended by some as preventatives against dermatosis. We think, as regards creams, that extreme prudence be exercised in the case of workers exposed to skin abrasions.

6. So far as the medical prevention plan is concerned, the major problem involves the hiring of carriers of skin diseases, or confirmed allergies. Practically speaking, we find it difficult to refuse to hire in such cases, unless the possibilities for reclassification are ideal.

It would seem that an evaluation of this nature should be made in advance, during the job orientation stage, for example.

6. Compensation. By decree No. 67.127, of 14 February 1967, diseases attributable to exotic woods were added to the list of occupational diseases entitled to compensation under No. 47.

The Commission d'Hygiène Industrielle (Industrial Hygiene Commission) has deemed it preferable to substitute on the list limiting occupations exposed to risks as proposed by the draft, the heading titled "Handling, treatment, and work requiring the use of exotic woods."

The symptoms entitled to compensation are dermatitis, the eczema forms or erythematosa, conjunctivitis, and asthma.

Delay in taking over has been set at 7 days.

Involvement due to other than equatorial, tropical, or subtropical trees cannot be considered as falling within the bounds described in Table No. 47.

We feel that it is up to industrial physicians, aided by research workers, to draw the attention of the legislature, in accordance with the provisions of Article 500 of the C.S.S., to the existence of troubles caused by the trees in our areas. Only then can we hope for more complete, and thus for more equitable, compensation in the future for the morbid phenomena caused by wood.